GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

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A FEW WEEKS ago I found on the ground in front of some hives a few bees in apparently bad order, and among the rest one tumbling around with its abdomen torn away. I tried to think what could have caused it, but gave up the conundrum. I suppose the true answer is given on page 531—the poor thing kicked itself to pieces. A cherry orchard probably had some spraying when still in bloom. [We should be glad to hear from others of our subscribers as to whether they have seen bees torn to pieces in the manner described.—ED.]

WHAT A. I. ROOT says, page 557, about the danger of having an automobile in the hands of a drunken man suggests the thought that if automobiles are to become cheaper than horse-flesh it may become necessary to pass laws against having any saloons. I really believe we'd be just as well off without saloons anyhow. [Yesterday a horse went by drawing a drunken driver. The poor animal seemed to know that its owner needed to be taken care of; and in spite of the pulling and hauling at the lines it kept right in the road. But an automobile would, possibly and probably, run him into a ditch and crush him beneath its weight—ED.]

"NOW, IS IT hard to suppose that a three-story hive, run for extracting, might average 70,000 bees?" p. 528. Nothing very hard about it for me, but how about a certain editor who not so very long ago was trying to convince me that such a thing was an impossibility? [Convince you that such a thing "was an impossibility"!—why, I can not recall to what you refer. I have advocated strong colonies, "double-deckers," for years, and last year at one of our out-yards I had several three stories high, and one or two four stories. If some of them did not have one hundred thousand bees it would be strange. If I was trying to convince you that a colony could not have that number, I must have been inconsistent with my practice and teachings.—ED.]

YOU'RE RIGHT, Mr. Editor, I made very bungling use of language when I said "giving all the earlier supers on top." I meant having the earlier or older supers always on top, each time putting the later supers under. My practice, like the practice of many others, has been to put the second super under the first, the third under the second, and so on, leaving the oldest super always on the top, except when it comes near the close of the harvest, when the empty super is put on top. I think I should never have thought of trying any other way if friend Hershiser had not stirred me up, but he has set me to thinking whether a compromise may not be a good thing, and if any good comes of it he should have credit therefor. This year I'm putting the empty super next to the brood-chamber, as heretofore; but instead of having the oldest super always at the top, it will be next above the lowest. I think this will not only hurry up the finishing, but it will especially help about getting the corner sections finished.

EDITOR HUTCHINSON is doing his share toward popularizing bee-keeping in the magazines. A finely illustrated article from him appears in the June issue of that aristocrat of agricultural magazines, *Country Life in America*. [Nearly two years ago the editor of *Country Life* wrote our firm asking us to name some one who would be capable of writing a general article on bees, and who would be able to furnish a set of fine photos for purpose of illustration. We could think of no one abler than our friend W. Z., and immediately put him in touch with the editor of *Country Life*. The sequel is the fine illustrated article that appears in that paper for June. Mr. Hutchinson is getting to be known pretty well outside of beedom as a writer on bees. His skill with the camera and with the pen makes him just the man to write popular

articles for a popular magazine. All such articles do much to bring honey more generally into use, and the knowledge of *how* it is produced in such quantities does much to inspire confidence in the purity and wholesomeness of the comb and extracted honey that is offered for sale.—ED.]

MR. EDITOR, let us see how far we can agree about the matter of putting the empty super under or over, and having only two or more than two supers on at a time. If the second super is put below the first, and no other super added till the first is finished, the finishing of that first super will be hastened, and the sections will be sealed clear out to the wood better than if the super had been finished on top, because the bees are so loath to jump over that vacuum and begin work in the sections above that they will work away at the lower super till actually *crowded* out. That crowding will also have the effect of increasing the tendency to swarm, and it will increase the amount of wax used in brace and burr combs. Thus far, I think, we agree. You may also agree, at least partly, in my further belief, which is this: That that crowding is for a time somewhat as if only one super were present, and there being so little surface on which to work, some of the bees are occupied secreting wax and putting it where not needed; whereas, if an empty super were given under, those bees would at once be at more profitable work. Many colonies are strong enough to fill the hive and three or more supers *full* with bees. The limiting such a colony to less space than it can fill must have some effect in limiting the amount of work it can and will do. This is a very practical matter, and I hope with you that before the year is out we shall have light from practical honey-producers. If I can make more money by it, I am anxious to be convinced that the best way is never to have more than two supers on a colony, the empty super always being given on top. It would make less work, and if it also makes more money I would be foolish to continue any other plan. [Either you did not say what you mean again, or else I do not understand you. You say, "If the second super is put *below* the first" the finishing of that first super will be hastened. Don't you mean, instead of *below*, "above" in the quotation just given? If you do, then I think I could agree with you all through.—ED.]

THE IMPORTANCE of the matter is my apology for continuing the discussion of that vacuum you speak about, Mr. Editor, p. 528. You say, "When an *empty* super is put on top, no work has begun, and there is no vacuum to bridge over." That would be so if the work were begun at the bottom of the section, and the bees worked gradually up. But the work is not begun at the bottom. The bees cluster at the top, and the upper part of the section is first sealed. You may say the bees begin all over at once. Certainly nearly that in some cases. Let us suppose they commence all over at once. Now let us take two colonies exactly alike, each having a super well advanced, and to one we give a super on top, and to the other a super under. Tell me whether there is not exactly the same vacuum for the bees to start on in each case. Talking about nature, is it natural to force them to begin in a vacuum above. Is it not more natural to have them make a start *below* the partially filled super above? If the colony is strong and there is a good flow of honey, the bees will commence at once in the empty super beneath, and the bees will be working in the two supers for at least a little time before the other colony begins in the empty super above. We talk a good deal, and properly, about the advantage of having foundation so the bees can commence work on a larger surface. Now don't you think there must be a gain in a full flow to have the bees working in two supers instead of one? For it must be remembered that whatever of advantage is gained by having the empty super over (and I have no desire to dispute the advantages), that advantage is gained by the fact that the bees are forced for a time to work in a smaller space. [This is a very important matter, and we invite discussion from our subscribers. Yes, there is a vacuum in both cases, but the conditions surrounding one are quite different from the conditions surrounding the other. In the one case the bees are induced to finish up the work already begun; in the other case they begin another job before finishing the first with the possibility that neither will be finished as it should.—ED.]

During the past year much has been said in this journal relative to bee-keepers writing more for the general press and less for a class who need no further enlightenment on the subject of honey. The writer is a pioneer in this movement, having written a series of illustrated articles for the *American Grocer* in the summer of 1890, the result of which was very gratifying to him. Some two years ago Mr. W. Z. Hutchinson, of the *Review*, did the same thing in the *Cosmopolitan*, on a much more extended scale, reaching a larger audience probably than is enjoyed by all the bee-journals combined. But the masterpiece of Mr. Hutchinson appears in the June issue of *Country Life in America*, published in Harrisburg, Pa. He gives an interesting summing-up of bee culture, illustrated in the highest

style of art. The photographs were, if I am not mistaken, all made by Mr. H., and show him to be a master with the camera as well as with the hive. One picture shows a frame of foundation partly filled out in the middle; and if any illustration ever showed where man's skill ceases and God's power begins, this is the one. It is enough to silence for ever all talk about "appropriate machinery" for making artificial combs. Mr. Hutchinson explains the absurdity of the comb-honey canards. If a dozen more writers I could name would do the same, they would render a greater service to bee-keeping than all the bee-journals can do.

Even at the risk of repeating what is trite to many, I copy a few lines in regard to the relative merits of blacks and Italians. It is well put, and I copy a paragraph for the benefit of our new subscribers:

Under all circumstances, the Italian probably comes as near being the "all-purpose" bee as does any variety. The Italians are amiable in disposition, and very industrious, but they have their limitations. The Italians are not as good comb-builders as the black or German bees; they dislike to store their honey far from the brood-nest, and are inclined to fill the cells so full of honey as to give the sealed combs a darker appearance than that capped by the blacks, the latter leaving a little air-space between the capping and the honey, thus giving the combs a snowy-white appearance. The blacks are good workers when the harvest is abundant and near at hand, but lack the staying qualities of the Italians when nectar must be searched for far and wide. For the production of extracted honey (that thrown from the combs by centrifugal force, the combs being returned to be refilled) the Italians are the ideal bees, unless it may be in the warmer countries, as in Cuba, where the honey-flow comes in winter, and as the Italians are apt to slack up in breeding as the season advances, the approach of winter finds the colonies too weak in numbers to take advantage of the harvest.

One very fine view shows the home apiary and residence of A. I. Root and the home of A. L. Boyden.

In addition to Mr. Hutchinson's skill in the line of artist and writer, his personal bearing and friendly address go far in rendering his writings interesting to those who enjoy his acquaintance.

BEE-KEEPERS' REVIEW.

The *Review* has the largest proportion of editorial matter, I believe, of any bee-journal. In speaking of bees as a nuisance, all members of the National Association should read the following:

Some bee-keepers imagine that, because the National Association has always been triumphant when there has been an effort to drive some member, or his bees, outside the corporation, they can keep bees in almost any way in almost any situation. I am glad to see that Manager France does not propose to defend every member whose bees are declared a nuisance, regardless of whether they are a nuisance or not. All bee-keepers well know that a large apiary might be so managed as to become a terrible nuisance to near neighbors in a city or village. I investigated a case last year in which the bee-keeper was decidedly to blame. He even went so far as to stir up his hybrids purposely, on hot afternoons, that he might hoot and jeer at his neighbors when they had to "cut for the house." Then he boasted that he belonged to the National Association, a thousand strong, which would stand by him. It stood by him by advising him to move his bees out of the village. Of course, this is an extreme case; but we all know that, even with the best of management, bees will sometimes prove an annoyance, if not a nuisance.

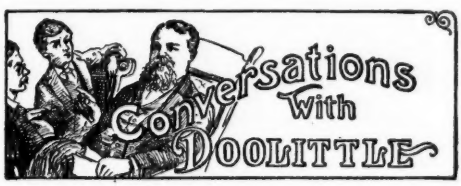
A fine view of a windmill arranged for pumping water, shelling corn, grinding feed, and running a saw to make hives, etc., is given. Concerning these mills, the editor says:

For a farmer bee-keeper who has wood to saw, water to pump, and feed to grind for stock, and bee-hives to make, I can think of no more desirable power than that of a good windmill.

The rapid advent of gasoline as a motor power will, I think, cause Mr. H. to write differently in a few years.

Here is an item about Dr. Gandy:

Dr. J. L. Gandy, Humboldt, Nebraska, has sold a carload of bees to go to the famous Watson ranch of Kearney, Nebraska. Roy Wilson will have the management of the bees. The Humboldt paper says that twelve men worked all night preparing the bees for shipment, and some of them "bore marks of their labor" the next day.



REPLACING QUEENS.

"Say, Mr. Doolittle, how long do queens live?"

"What led you to ask me that question, Mr. Brown?"

"We are told in the bee-papers that, to reap the best results in honey, queens over two years old should not be allowed as mothers of colonies. I suppose from this that the writers think that from two to three years is the average life of the queen. What is your experience in this matter?"

"My best queens live to be four, five, and, in some instances, six years old; but the average life of queens is about three and a half years. The length of a queen's life, other things being equal, depends upon the tax that is put upon her egg-laying powers, and under our modern management queens do not average so long-lived as they did in box-hive days."

"Would you think it best to change all queens that were three years old? I have some such that were just as good layers as ever last fall, and came through in my strongest colonies, and I was wondering whether I ought to change them this summer. What do you think?"

"I do not think that the question of age should be considered in the matter of changing queens, except so far as it may be taken as a sort of rule to judge of when they will be apt to fail. I would not replace a queen so long as she lays up to her full average, especially at this time of the year, for during the month of June any queen that has even less than the average value can supply eggs which will be turned out into bees at the right time for the honey

harvest; while if a general change is made, many colonies are likely to lose thousands of eggs at best, and, not only this, the young queen is often very liable to bring a lot of workers on the stage of action in time to become consumers rather than producers."

"Would it have been better to change in early spring?"

"No. A change at that time would have been worse yet, as it would have resulted in a loss of bees at just the time when each bee is of the greatest value to push forward the rearing of others for the honey harvest."

"When would you change queens then?"

"If queens must be changed I would advise waiting till the harvest of white honey is over, for the loss of eggs usually sustained through a change of queens will then be little or no loss, as they are generally hatched into larvæ at a time when said larvæ have to be fed out of honey stored in the hive, while the mature bees generally consume more of the stores already laid aside than they add to them."

"What is your opinion in this matter?"

"With one exception, I pay very little attention to the matter of changing queens, where the colonies are worked for honey instead of queen-rearing, for I find that nineteen colonies out of twenty will supersede their own queens as soon as they need changing; therefore, with the one exception it is a waste of time for me to be worrying about this matter, keeping track of the ages of all queens, etc., when the bees will look after the matter at the proper time."

"Then you think I better not undertake these things?"

"That would be my idea. The bees will attend to the changing, and make fewer mistakes than you are likely to make, no matter how careful and wise you may be. If you think I am wrong in this matter, set apart a certain number of colonies to try each way, and a term of years will tell you which will pay you better."

"You spoke of an exception in this matter. What did you mean by that?"

"I find that more queens are superseded during the month of August than at any other time of the year; and so by a little forethought, and a *little* work, I fix it so that the bees will attend to this matter, if the queen is failing, and at the same time accept queens from my very best stock to do it with, instead of supplanting their queen with inferior stock, as they would do if left to themselves, providing their mother was not of the best breed obtainable."

"How can you accomplish such a thing as that?"

"It is very simple. Just before the close of the white-honey harvest, at a time when the bees will rear as good queens as at any time during the season, I start queen-cells in proportion to the number I consider I wish, starting them from brood from the queen which has given me the best results during the past; and if I have chosen the right time these cells will be 'ripe' at just the time the bees will be most likely to start cells for supersedure."

"How do you know the colonies which are starting supersedure cells?"

"I do not know this, nor do I think it worth the trouble to find out. I judge from outside appearances, and the amount of white honey stored, which colonies may be liable to supersede their queens, and those I would desire to have do so; and when I have decided this matter, I give one of these ripe cells to each of such colonies."

"How do you give these ripe cells?"

"Always by putting them in queen-cell protectors. You know what they are?"

"Yes, but that was not what I meant. Tell me how you put them in the hive."

"That part is very simple. Having the ripe cells all in cell-protectors, I go to the hives designed for them; and if the bees are still in the sections, I put one of these protected cells in any section where I think the bees will be likely to care for it till the queen emerges. If no sections are on, or the bees have left the sections, then I lift the cover, spread the frames a little, sufficient to allow the cell-protector to go just below the top-bar of the frames, when the frames are brought back in place again, which crowds the protector into the comb so that it is held in place as in a vise."

"Any certain place between the frames where you put them?"

"I have had the best results where the cells were placed the furthest away from the brood, consistent with the bees' caring for them, which is generally near the back upper corners where the most sealed honey is allowed."

"What about the protector? Do you take that out as soon as the young queen has come out?"

"No. The simplicity of this matter is the little work required in accord with the results obtained. I pay no attention further than what I have told you, not opening the brood-chamber to the hive again till the next season arrives, when the cage is found and taken out, usually when clipping the queen's wings during fruit-bloom."

"Oh! I begin to see. You can tell the number you succeed with by the cage between the combs, and the queens not having their wings clipped?"

"Exactly."

"About what proportion do you find with unclipped wings?"

"That depends somewhat on years. Some years the bees do not allow their queens to rear as much brood as others, and in cases of the maximum amount of brood not being reared, not so many are accepted. But generally I find that from one-half to two-thirds of these cells are accepted and a young queen from my best mother is reigning the next spring in place of the old one of the summer before."

"And in this way your stock is growing better with each year?"

"Exactly. And herein a gain is made

also. Try it next August, and see if you are not pleased with the idea."

ELSEWHERE in this issue we have called for reports of the honey crop throughout the United States. Be sure to condense these reports on to postal cards, not exceeding a half-dozen lines.

MR. WILMON NEWELL, who a few months ago accepted a position as Assistant State Entomologist in charge of the Experimental apiary at the A. & M. College, College Station, Texes, has now resigned to accept a similar position as Assistant State Entomologist of Georgia. In the meantime Mr. Louis Scholl, Hunter, Texas, Secretary of the State Bee-keepers' Association, has been appointed to fill the position vacated by Mr. Newell. Both have been promoted, and are both good men for their places.

THE HONEY SITUATION IN CALIFORNIA.

THE following letter, recently received from the California National Honey-producers' Association, will explain itself.

Mr. Editor:—California bee-men owe you a great deal for many different subjects wisely summed up in this valuable journal; but, in my mind, the most important is the continued and persistent effort to keep down the tendency to boom the crop prospects to such an extent as to surprise and alarm the conservative bee-man. It is a positive fact that no one can be sure of a big crop in Southern California until it is produced. All that a person can justly say (when the conditions are most favorable) is that the prospects are good for a crop of honey up to the time of the report. It makes many of us tired, who have had the most experience, to read a positive assertion that "a certain season will be a record-breaker," or that California will "produce so much honey that we shall not know what to do with it." I wish to add my emphatic protest to that of GLEANINGS against these reports, as they create a hardship, not only for the bee-men but also the dealer, for they are, in nineteen out of twenty cases, wide of the mark and utterly misleading.

The reports sent to the California National Honey-producers' Association show that reliable men from different sections estimate that Southern California can not, under the most favorable conditions, secure more than from one-third to one-half of a crop this season. In three of our own apiaries the queens stopped laying for three weeks, and all the others are affected in a lesser degree by the continued cold dark weather. Unless it should come off warm within the next two or three weeks, we shall have practically a crop failure in Southern California except in a few small localities which have been favored with more sunshine than the rest, and report as high as 30 lbs. to the colony now in the tanks.

Again, I wish to say, do not report your crop prospects on the highest possible output under the most favorable conditions, for we seldom get all these conditions that are required to make a large yield.

GEO. L. EMERSON,
Sec. C. N. H. P. Ass'n.

Los Angeles, Cal., June 11, 1903.

It has been our policy to report as nearly as possible the *exact condition* of the season in different localities. To try to "bull the market" in the interest of bee-keepers, when there was a big crop of honey, might be almost as disastrous as to "bear" it at the wrong time. What producers need is an absolutely truthful statement, so that prices may be regulated accordingly. If the statement goes out that there is a scarcity of honey, many producers would hold their crops with a view of getting higher prices. While they are holding, others would be unloading their crop, with the result that the market would be going down, down, down, and the fellows who are holding would, in the end, have to sell lower than their neighbors who have taken advantage of an early sale, when the prices were comparatively good. If, on the other hand, inflation reports go out when the crop is light, prices will rule low at the very beginning, with the result that a good bulk of the honey will be sold at a low price when it might just as well have obtained a higher figure.

PORTABLE EXTRACTING HONEY-HOUSE.

WHEN I visited Mr. Chalon Fowls, in Oberlin, in company with Mr. W. Z. Hutchinson, a few weeks ago, he showed us a very neat extracting-house in the barn, that he had just completed, of such size and shape that it could be moved from one yard to another. The total cost of the structure, not including any labor, was only $15.00. As he is a specialist bee-keeper, he has spare hours which he can devote to general work that comes in effective during the general rush of the season when he has no leisure. Accordingly, in the spring he constructed indoors a small extracting-house 6×10×7 feet high, inside measurement. From the floor to the top of the peak, the distance is 8 feet. The roof-boards are sides of drygoods-boxes which are then covered with tar felting. A door and two windows (the latter sliding so as to provide for the escape of the bees) complete the structure.

Mr. Fowls now concludes that it would have been better if he had made it two feet longer and one foot lower. This would have required no more material, made the building no more expensive, but at the same time more convenient as well as roomy. The space overhead does not count for much, but floor space is every thing.

After the building was constructed, the next thing was to move it. Mr. Fowls made a wooden axletree to fit the rear wheels of his regular wagon, of a sufficient length so that the wheels would clear the building. This was connected to a reach which would be long enough to allow the building to clear the running gear and the front wheels on the regular axletree.

After the building was mounted in the manner described, it was run up in front of the photographer's office, and a picture taken of it. The result is shown in the il-

lustration on page 591. Incidentally I might remark that the picture shows a part of the campus and some of the buildings of Oberlin College. These bring back to me pleasant memories of when I was a student at Oberlin some twenty-two or twenty-three years ago, where I spent four years of time, and where I put in some of the hardest work I ever did in my life.

But to return: I asked Mr. Fowls the question whether he could not have constructed the building at one of the outyards, where it was to be located, more cheaply than he could build it in the barn and then move it out afterward.

"Possibly," said he. "But the building could not have been put up when I had the spare time, in the barn. Rain or shine, I could go on with my work, a little to-day and a little to-morrow, and so on until I had completed it; and the only cost of moving was the hard-wood axletree for the rear wheels."

His regular bee-horse, the one that was nearly stung to death, was put at the work of drawing the building to its permanent location. Permanent, I say — permanent until some other yard might be deemed better for bees; and herein is a possible advantage in having the building portable. One can never tell how long he will use some particular location. Farmers may change their crops from alsike or red clover to timothy. Basswoods may be cut off to such an extent as to render the location, once good, very poor. Moving the yard say a mile or two might make the difference between a good profit and a loss. By constructing the extracting-house so that it is portable at all times, one is in position to "pull up stakes and go to pastures new" and better.

This building is large enough to store quite a crop of comb honey. Mr. Fowls mentioned to me the number of thousand pounds; but any one can figure out just how much it would accommodate and still leave sufficient room for the extractor, the uncapping can or box, and other necessary tools for the work.

THE HONEY CROP FOR 1903.

THE season has been very peculiar throughout the United States. At the beginning of the season the conditions were exceptionally favorable. In California the bee-keepers were rejoicing in the fact that they had a sufficient number of inches of rain to insure a crop; but cooler, chilly weather came on, and the result is in doubt, although it is probable that there will be a light crop. In Colorado so far as we know there will be the usual crop of alfalfa. In the central portions of the country there have been continued drouths. This was finally broken by downpours of rain, and chilly weather continuing clear up to the present, with the result that we have been getting too much of a good thing. While there are thousands of acres of clover-fields in bloom the bees have not been able to get out to any very great extent. If the weather should turn warm from now on, a fair crop of clover for some sections could be secured. In portions of New York State and especially in New England the drouth has been very severe. Rain has begun to come, but the probabilities are it has come too late. Taking it all in all, the general conditions seem to indicate only light crops of honey throughout the United States. The next ten days will tell the story. There is yet a chance for a good basswood flow and some clover honey.

A. I. R. reports for Northern Michigan that there has been no rain for three weeks. Here we have had rain every day, and that is a fair sample of the variable conditions of weather over the United States. In one place it is severe drouth; in another, too much rain and cold, and in some sections awful floods. It is a queer season taking all in all.

The condition for Ontario, Canada, is thus stated by a correspondent:

Mr. E. R. Root:—After reading the report of Mr. J. D. Bixby, of Guilderland Center, N. Y., in which he states that they have been forty-five days without rain, I thought that I would just report to you the conditions in this locality, which I fancy are worse even than in Mr. Bixby's. From the 2d of April until the 7th of June (65 days) we did not have ten minutes of rain — bees barely living; no swarms yet, and very poor prospects of any; hives very light in general. All kinds of crops are stunted so that they will not amount to anything much this year. What little clover there is, is just beginning to bloom. We had a nice rain on June 7. We have had a number of fires also, and some very disastrous, on account of the drouth; but please remember, Mr. Root, that such a drouth as this is a very unusual occurrence here in Ontario.

A. G. LEE.

Addison, Ontario, Can.

Our subscribers all over the United States are requested to send in postal cards telling something of the season and the prospects. Make inquiries and then report on a postal. Don't write long letters, but condense your statement into a half-dozen lines if possible.

Just before going to press.—Weather conditions are very much improved. Wisconsin reports a good honey-flow.

"SPRAYING CROPS;" WHEN AND HOW TO DO IT.

A NEWLY revised edition of the book, "Spraying Crops," of 136 pages, by Clarence M. Weed, Professor of Zoology and Entomology of the New Hampshire College, has just been issued from the press of the Orange Judd Co. It is clear up to date, covering the whole subject from beginning to end, and profusely illustrated. The first chapter relates to general principles; to spraying; enemies to be destroyed by the poisonous mixtures; to their habits; the parasitic fungi which have to be destroyed by contact poisons. The book also includes the spraying of shade-trees, ornamental plants, flowers, vegetables, field crops, and even domestic animals. Particular emphasis seems to be given to just how to prepare the mixtures for the different kinds of work enumerated. But that part which is particularly interesting to

the bee-keeper is that which relates to *when* to spray. In relation to this on page 49 the author says:

It is commonly believed that spraying trees in blossom, in case the arsenites are used, endangers the lives of the bees visiting the blossoms. In some regions laws to prevent this have been enacted. Spraying at such times seems unnecessary, and intelligent fruit-growers should not practice it. The bees are essential to the production of fruit, and there is no excuse for destroying them.

And again on page 52 he writes further:

June—The first part of June usually marks the fall of the flowers of most fruit-trees. Never spray while trees and vines are in full bloom. Make the second application as soon as the petals have fallen. This will be late in May or early in June, for apples; a week or ten days later for other fruit-trees and grapes. Make the June treatment thorough. A good general rule to follow after the second spraying is to let each additional treatment be made from ten days to three weeks after the preceding one; the shorter interval if there are heavy washing rains; the longer if the weather is comparatively dry.

From the standpoint of a fruit-grower, if not of the bee-keeper, it would appear that, for the codling-moth at least, the one that affects apple-blossoms, there is no advantage in spraying during blooming-time; because on page 2, in speaking of this moth, the author says: "The parent of this little pest is a small chocolate-colored moth, which appears in the spring *soon after the blossoms have fallen*, and deposits its eggs in various places upon the young apples as well as upon the adjacent leaves." The italics in the above are mine. It appears there would be no use in spraying before that time.

He credits our own Prof. A. J. Cook with priority of discovery of spraying apple-trees to prevent injuries caused by the codling-moth—experiments which, he says, have proved to the horticultural public that the remedy was safe and sure; and it was, he adds, through Prof. Cook's enthusiastic advocacy that the American fruit-growers to-day are now able to put out more and better fruit.

BEE-STINGS THAT WE DO NOT LIKE.

If there is any place over my whole body that I do not like to get a sting outside my face it is up my sleeve on my wrist. Ordinarily I never take any precaution about putting on cuffs or extra sleeves that are bee-tight; that is, fitting closely around the wrist. But last week when I went down to the yards (it was just after a rain) the bees were particularly cross. Two or three got up my sleeve and stung me on the wrist. I paid very little attention to the matter, although I suffered considerable pain. Examination showed that one of the stings was right in one of the blood-veins, and another near one of the nerve-centers. The next day the arm seemed to be lame, and what was strange, there were sympathetic pains in the other arm in exactly the same place as in the other. Hereafter I shall wear tight-fitting sleeves, or, better still, long sleeve gloves with the fingers cut off at the ends; and this reminds me that they are used by a very large number of practical bee-keepers. It behooves us all to be careful not to get any more stings than is absolutely necessary, for the effect of the accumulated poison may be serious in its effects in after years, as it was in the case of Langstroth and some others.

And, by the way, should these sleeves be treated with any preparation like linseed oil, paint, or any other substance to render them more sting-proof? We have been sending out for a couple of years special bee gloves that were soaked in linseed oil, but it has always seemed to me that the oil would make the sleeves warm, causing undue perspiration to the parts protected. My own notion is that a sleeve made of heavy ducking, not treated at all, would be better than having something that would make the fabric stiff and unwieldy. We should like to get the opinion of our subscribers, as we are thinking of getting up a special bee glove, or sleeve, with the fingers cut off, for a very large class of bee-keepers who are looking for something of just this kind.

RECLAMATION OF ALKALI LANDS IN EGYPT AND IN AMERICA; MORE GOOD BEE-TERRITORY FOR BEE-KEEPERS.

The United States Department of Agriculture, Bureau of Soils, has issued a bulletin by Thomas H. Means on the subject of reclamation of alkali lands in Egypt. The author has investigated the methods that have proved to be successful in Northern Africa, with the view of recommending those same methods, where effective, for the waste lands of our western country.

There are a number of illustrations showing lands that were formerly deserts, supporting nothing but alkali weeds, that are now growing clover, rice, and cotton in luxuriance. How this was reclaimed and made to bloom as a garden of Eden is explained in this bulletin. Various illustrations through it show fields of cotton, rice, samar (this last a kind of plant that is used for making mats and rugs).

There are several plans for reclaiming the land. One, the oldest, is known as the basin plan. The soil is flooded over a considerable area to the depth of several inches. The water is then allowed to run off, carrying with it a strong solution of the alkali in the soil. In some cases the alkali is carried down into the subsoil, leaving the upper portion suitable for growing of shallow-rooted plants like rice. But the plan generally in vogue is a modification or an improvement of the one just mentioned. The land is thoroughly leveled so as to hold a broad expanse or sheet of water. Open ditches, of a depth of 30 inches or more, are dug at intervals of 150 to 450 feet apart. The leveled-off land is "banked up and flooded to the depth of about four inches until sufficiently leached of alkali to permit plant growth." This method, while effective, is objectionable on account of the

ditches. In some cases the sides of the ditch erode, and in any case the ditches themselves occupy considerable area, rendering that portion of the land useless for crop production. This objection is very nicely overcome by the use of tile-drains in place of the open ditches. The four inches of water gradually percolates down into the tile, carrying with it large quantities of the alkali, which is then carried away.

This plan is being used in some of our western States and Territories with very satisfactory results, and the author expresses the hope that much of the alkali land of our great West can be permanently reclaimed for the growing of some of our important crops, as, for example, alfalfa.

The reader will now understand why the reclamation of these waste lands may be of supreme interest to the bee-keeper. It is well known that the available good bee-territory in the United States is becoming limited; and it is only by utilizing the deserts, turning them into productive country, that more territory can be made available. If the experiments now being conducted in various portions of the United States shall continue to prove successful, there will be millions of acres opened up for homes for ranchers, and last, but not least, bee-keepers.

We shall be glad to have any of our subscribers who are near some of these places where experiments of this kind are being carried on post us as to the result of them, for I can not imagine any thing more important than this one question of new territory unoccupied, and which can be made available for our friends the bees.

ARE BLACK AND FOUL BROOD ONE AND THE SAME THING? A REPORT FROM THE DEPARTMENT OF AGRICULTURE OF THE STATE OF NEW YORK.

A REPORT has been issued from the Department of Agriculture of the State of New York upon the investigation of infectious bee-diseases, by Veranus A. Moore and G. Franklin White, of the New York State Veterinary College, Cornell University. Specimens of black, pickled, and foul brood have been submitted to each of the above named, and pure cultures made. On page 7 of this report a somewhat surprising statement is made, that foul and black brood are one and the same, and I copy that portion of it.

> It was thought at first that the bacillus so constantly associated with the "black brood" was the organism described by Howard as *Bacillus millii* which he pronounced to be the cause of the "New York bee-disease" or "black brood." A more extended study of this organism, however, showed that it did not correspond to the description given by Howard, but, to our surprise, it did not resemble *Bacillus alvei* of Cheshire and Cheyne. A very careful study of this organism from the different specimens of "black brood" confirmed the identity of the species from the different sources. While there seem to be slight variations of this organism from the description of *Bacillus alvei* recently published by Harrison there are no differences that can not be attributed to differences in the nature of the media, temperature of cultivation, and, possibly in addition to these, influences of environment before the cultures were originally made.

And on page 9 we find the following:

> The most striking differences between the various specimens of brood sent to us as "black brood" and the description of "foul brood" is, that most, but not all, of the dead larvæ in our specimens were not viscid. The specimens we received labeled as "foul brood" differed very little in their general character from those of "black brood." The "pickle brood" specimens varied. Some of them were apparently identical with the "foul brood," while others presented a variety of changes in the larvæ. The micrococci found in the first specimens of "pickle brood" were thought for a time to be the cause, but thus far we have not obtained satisfactory evidence to that effect.

You will remember that, some time ago, Dr. W. R. Howard, of Fort Worth, Texas, at the suggestion of this journal, made some quite exhaustive researches into the general character of the New York bee-disease, or black brood. Specimens of the affected combs from the inspectors of New York were sent to Dr. Howard, who, after some extended study with his microscope, during which something like 1000 slides of the diseased matter were examined, reported through these columns that he had found the microbe that was the cause of this new disease that was responsible for the loss of so many colonies in Central and Eastern New York. He designated the microbe as *Bacillus millii*. He is a skillful bacteriologist, and fully realized the importance of separating and isolating the said microbe, making pure cultures of it. Whether his conclusions were properly drawn is not for me to say; but this is true, that the black brood that *I* have seen differs in several important respects from the ordinary foul brood, and the inspectors of New York State have been unanimous, if I am correct, in the verdict that black brood has altogether different characteristics from the other disease more commonly known. The dead matter of the former has a gelatinous character, and only slightly ropy or stringy, while that of the latter is decidedly ropy and gluey, with a distinct odor like that of any ordinary glue-pot. If there is any appreciable smell present at all in black brood (and usually there is none) it is sour. Black brood seems to spread a little more easily; that is, it is a little more contagious. While it is true the same treatment, the "McEvoy," cures both diseases, the black, when it does get started, seems to be more destructive, and more difficult to bring under direct control.

It should be said, however, that there are some bee-keepers in New York who claim there is no difference between black and foul brood; that they are one and the same disease; and even Inspector McEvoy, of Canada, whose opinion certainly should carry some weight, has expressed the same opinion.

This is a matter that will bear further investigation. It is possible that foul brood under different environments will show different symptoms, but I should hardly suspect it. I have seen samples of what was reported to be black brood that had a sour odor, that was scarcely ropy, and yet was devastating the whole yard of bees in spite of all the owner could do.

GRAFTING CELLS.

WHILE our artist was in Medina last summer he made a sketch of the different methods of grafting. In the first place, a lot of wax cell cups are stuck on to a cross-bar running through the brood-frame. The comb, of course, is cut away. There may be anywhere from one to two dozen cells in a frame; usually twelve is about as many as the bees will handle in one hive to advantage.

The cells are stuck on to the bar by first dipping the bottom of the cell cup into melted wax, and quickly setting it down on the wooden cross-bar while the frame is turned upside down as shown in illustration 3. The wax is kept hot on an oil-stove.

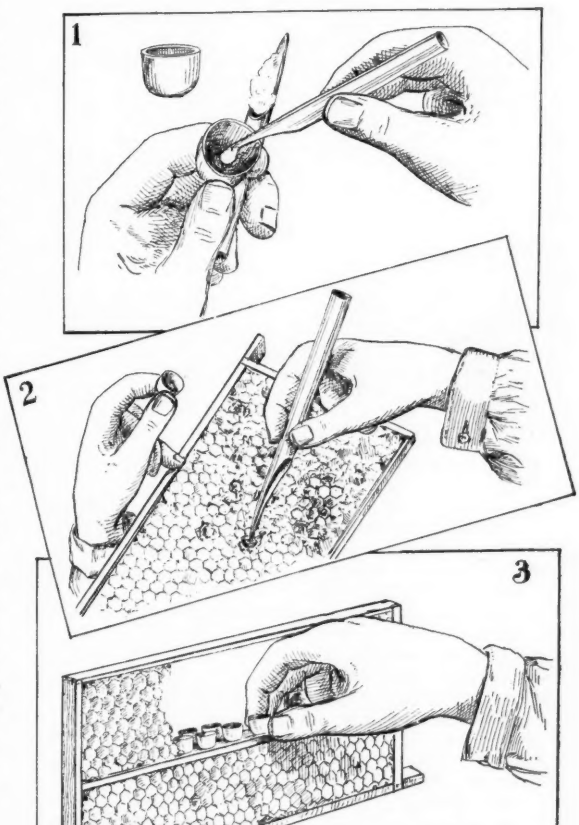
After having prepared a number of frames, the next operation is to find a queen-cell having a larva in it some three or four days old, or at an age when there will be a large amount of royal food packed away in its bottom. The larva is removed, and the food is stirred up.

We next go to a hive and select a frame from our queen-breeding colony, which has a large number of eggs just hatched. This is taken before a strong light, and we are now all ready for the grafting. With the end of a toothpick a small amount of royal jelly is dropped into a cup. Another drop is put in the next cup, and so on till the whole dozen cells are supplied with the royal food. The amount of jelly may vary from the size of a No. 6 shot to a BB shot; in fact, one can put in as much as he pleases. Doolittle recommends the size of a BB shot; but we have obtained very good results by using a less amount. We now hold the comb up to the light, showing the young larvæ, and pick out one individual. This is done by inserting the sharp end of a pick under the larva, and lifting it out. It is then gently deposited in the royal jelly in one of the cups. A little twirl of the toothpick will dislodge it, leaving it in the jelly. Another larva is picked up in the same way, and set down in one of the cups, and so on till all are grafted.

Where one is grafting a large number of cells, the first procedure should be to supply all the cell cups with a small quantity of royal food. When every thing is in readiness, take the comb out containing the selected larvæ, putting one into each cup. As soon as a frame of cells is grafted it should be set down into a queenless colony, or any colony, in fact, that is selected for starting cells.

Some queen-breeders prefer queenless stocks for cell-starting. Others will use the upper story of a strong colony if honey is coming in. Our Mr. Phillips has secured very good results by using a colony containing a queen; but the cell-cups themselves are surrounded by a perforated zinc cage. Strange as it may seem, the bees will sometimes start the cell cups even while the queen is present; but as a general rule we have found it necessary to cage the queen for a day or two to give the bees a sense of queenlessness. They will then start the cell cups; and after they are once well going they can be put in the upper story of any strong colony, and completed.

But we are now using with considerable



satisfaction wooden cell cups—little blocks of wood with a ¼-inch hole bored down into them, say ⅜ inch deep. These are then filled with a piece of soft wax. A cell-forming stick of the proper size, having a rounded end, is then punched down into this little ball of wax in the hole in the block. A little twisting and working will form a very nice cell cup.

These wooden cups are then to be grafted and secured to any cell-bar. A nail is run through the wooden block lengthwise so the point just sticks through, say $\frac{1}{16}$ or ⅛ of an inch. When the cup is grafted, this sharp point is shoved up into the cell-bar, where it sticks.

The beauty of these *wooden* cups is that they can be handled like so many clothespins. The wooden end can be jammed into a comb, or it can be used to block up a wire-cloth cylindrical cage or a cage made of perforated zinc, depending on whether we want the bees to have access to the queen or not after she hatches from the cell.

A little later on we will give further illustrations showing our present *modus operandi*, which differs somewhat in general details from those herewith presented.

OPEN-AIR FEEDING FOR BEES.

BY A. I. ROOT.

A few days ago, while in the Traverse region, a neighbor bee-keeper, Mr. James Smith, of Turtle Lake, paid me a visit. He has kept bees for only two or three years; in fact, he is almost a beginner. A neighbor of his, an old bee-keeper, told him this spring that he could stimulate his bees to raising brood and building up much faster by open-air feeding. He had a lot of partly filled combs, and by the advice of this veteran he hung them out in the open air to let the bees uncap the honey and carry it to their hives. Of course, this soon made a row. But his instructor told him he could not stop after he had once commenced; that if the bees got to robbing each other he must put out still more honey to keep them busy. After he had pushed ahead on this line until he had lost 18 colonies out of about 75, he began to be suspicious that the instructions he had been following were rather bad. He had been reading GLEANINGS, and had seen what was said there about open-air feeding. I asked him if he had seen Ernest's recent caution. He said he had. Now, ye veterans and others, I wish to make a little protest. There may be times and circumstances when an old hand can hang out combs in the open air, especially if he stays right there to watch things and look out; but I do think it is very unwise, not to use a stronger term, to advise or even suggest that beginners, or perhaps we might say the average bee-keeper, should be told to put honey out of doors for the bees to take care of, without making trouble. When GLEANINGS was started I said on its pages, and also in the A B C book, that the bee-keeper should be exceedingly careful about leaving honey exposed or doing any thing that would incite robbing, or get his bees in a notion to get honey from any other source than the flowers. When the bees in an apiary get a mania for robbing it is a hard matter to get them over it. If they learn it in the fall I have good reason to believe they will commence the same thing in the spring; and when they once get a going, it is not alone the weak and queenless colonies, but those that are in very fair order, and doing well, that will sometimes be wiped out in just a few hours. Another thing, this young friend had stores sealed up in the combs, ready to put in any hive that needed feeding; and there is certainly no better or safer way to feed in the world than to give a colony combs of sealed stores. From experiments I have made, I believe that nearly if not quite half of the honey will be lost where the bees uncap it in the open air and carry it to their hives and seal it up again.

BEE-STINGS.

Their Rational Treatment.

BY D. A. M'LEAN.

The old and well-worn adage of a small amount of prevention being worth a much larger amount of cure would be peculiarly applicable in considering the above subject if it were not that, unfortunately, our "prevention" does not always prevent, and we are obliged to resort to the "cure" after all. The best management of bee-stings is, no doubt, to so manage as not to receive them; but, as all bee-keepers know, this is not practicable, and all who handle bees expect to receive more or less stings.

While to many, and probably the greater number, this is a matter of indifference, to a good many, and especially the younger members of the fraternity, it is quite a serious matter, and one of the principal obstacles or objections to an otherwise extremely pleasant occupation. It is, then, perhaps, worth while to see if we can not discover some more certain relief for the pain of the stings, and some more successful method of treating them, than has so far been recommended. All remedies for relief from the pain of bee-stings, so far as I know, consist in the application of some supposed antidote to the poison, or of agents having some other supposed action, immediately over the wound made by the sting. Now, I wish to indorse emphatically what

is said on this subject in the A B C of Bee Culture under the head of "Stings." To suppose that, by applying a remedy to the surface, you can neutralize the poison that has been injected entirely underneath the skin into the sub-cutaneous tissues, and do it almost instantly, as it must be done to prevent the effects—irritation of the nerves, causing pain, and, later on, swelling, does not seem to me very reasonable, and I am convinced it rarely if ever succeeds.

Let us consider for a moment the "anatomy and physiology," if I may so call it, of a bee-sting. The poison is injected under the skin, among the fine network of nerves, blood-vessels, and lymphatics, which lie in that position. Now, the pain due to a sting may be divided into three separate kinds or portions. First, the sharp lance-like stab as the sting penetrates the flesh. Then after a brief interval begins the pain due to the action of the poison on the contiguous nerves. The duration of this, the severest pain, is variable from a few seconds to half an hour, or even more. Then after a still longer period, swelling, with its attendant uncomfortable feelings, supervenes. This third stage is frequently absent, especially with those who have been frequently stung.

The first of this series we do not expect to be able to avoid unless we escape the sting altogether; and it is to the second and third that we direct our remedies.

Now, what, if any thing, can we do to prevent or alleviate the effects of the poison? Let us examine a little more carefully what takes place. The material injected beneath the skin consists largely of an acid substance that is a violent irritant to nervous filaments. As soon as it is placed in contact with those filaments pain is felt, and the blood-vessels and lymphatics begin to absorb it, spread it into the surrounding tissue, and carry it away. If the entire contents of the poison sac were to be thrown into a vein of considerable size, and carried directly to the heart, I can very well understand how a single sting, by causing a clot of blood to form in the vein, might produce a very serious and possibly fatal result.

But the pain produced by the poison in contact with the nerves is of only brief duration *if left entirely alone.* Why? Probably because the acid of the poison has become neutralized by the fluids and substances it has come in contact with. Now if, as soon as a dose of the poison is received under the skin, the small area involved could be cut off from the surrounding tissue and all spread of the poison prevented until it had lost its virulence, no other effects would follow. Now, this is exactly what I propose to do as far as can be done with the means at hand, by my method of treating bee-stings, and that I have followed for a number of years with very gratifying results.

When I receive a *severe* sting (and there are grades of severity as you all know), with my finger-nail I scrape out the sting if it is still adherent, and immediately grasp with the thumb and finger the portion of skin where the puncture is, squeezing it very firmly between them—in fact, pinching it quite violently. This has the effect of numbing, to a great extent, the sensibility of the nerves in the portion pinched, so that the effect of the poison is not felt on them. It also has the effect of preventing the spread of the poison into the surrounding tissue. After holding in this manner for a few seconds I ease up on the pinching. If the pain begins to return I tighten the "pinch" again, and hold it until, on letting loose, the pain no longer returns, and I know the poison has lost its power to produce irritation of the nerves, and, consequently, pain; and that is generally the end of the trouble with that sting. Occasionally, and especially if you have forgotten during the first hurt of the sting, and rubbed the spot a little, you will have swelling later, with the discomfort attending it; but the severe pain caused by the poison has been avoided.

This may be considered a good deal of trouble and loss of time, and, if resorted to every time a sting is received, it might be so; but that is scarcely necessary.

Of the stings I receive while in the yard, probably four-fifths of them could not be located by me in five minutes after receiving them; but, there is the *other fifth.* As every bee-keeper knows, he occasionally receives a sting that is painful beyond all sense or reason, and makes him feel as though he wanted to say or do things. These are the stings that the pinching treatment will relieve, and enable him to keep his temper, and, after a few minutes, go on with his work; and I consider it well worth the time and trouble required.

To sum up the treatment, *do not* rub the place when a sting is received; *do not* resort to medicines applied over the spot, as they can do little or no good; *do not* lose your temper. Do at once, if the sting appears to be a severe one, *and you have time,* scrape out the sting with the finger-nail; grasp, with the thumb und finger, the skin where the puncture is located, and raise from the flesh underneath, and *pinch it hard,* holding it firmly until, on letting loose, the pain no longer returns. Resume your work with the charitable thought toward the bees that they do not sting you in a spirit of malice, but in the legitimate defense of their home and property.

Fort Larimer, Col., June 1.

[Your treatment seems reasonable; and whether you are a physician or not, it is quite in line with a similar one applied in the case of rattlesnake-bites. A friend of mine in Texas had a little girl that was bitten by one of the reptiles on the arm, below the elbow. Her arm was tightly bandaged just above the wound, to prevent carrying the virus by means of the blood to the heart. In the mean time a doctor was

sent for. When he arrived he stupidly ordered the bandage removed at once, with the result that the poison was carried almost immediately to the heart, causing death in a few minutes. My friend told me that this physician simply did not understand his business or else he would not have given such blundering and fatal advice. The trouble was he ordered the bandage removed *too soon*, before the poison could be diluted locally. The girl was doing nicely up to the time of the loosening of the bandage. I understand that snake-bites should, when possible, be treated by cutting off the circulation to the heart by means of a rope or handkerchief bound tightly above the wound. The bitten portion should be cut out, or when practicable the poison should be sucked out by the mouth. An old trapper once told me that he was bitten at a point where he could not strangle the circulation, so to speak, or reach the wound with his mouth, and he was alone. With his hunting-knife he cut out the portion of flesh bitten by the snake, for there was no time to lose. The part removed turned perfectly green in a few minutes, but our old friend lived, without the use of liquor or any other dose. Now, then, to get back to our text, your treatment is a good deal like the rational treatment applied in the case of snake-bites. But with bee-stings it is not necessary (and perhaps it may be impossible) to remove the virus, because the opening through which the poison is injected is very small indeed. If I understand the philosophy of your treatment, it is that the poison will be dissipated locally in the blood, and when the pain disappears the blood with the poison greatly diluted can be allowed to circulate as before.—ED.]

UNRIPE HONEY FOR THE CONFECTIONER AND BAKER.

How it May Injure the Sale of Good Honey; a Vigorous Protest.

BY R. A. BURNETT.

In a recent number Mr. A. I. Root, in one his Home articles, spoke of a bee-keeper in Northern Michigan who sold her honey in a perfectly raw state to a confectioner, and that both the buyer and seller of said honey seemed to be well pleased with their operations. "The producer sold a much larger quantity of honey from each colony of bees by taking it out of the combs before it was sealed than if it had been sealed and allowed to ripen before extracting."

Now, if there is any one thing that is more injurious than another to the sale of extracted honey, it is unripe or improperly cured honey. I do not know that I have read any thing in a long time which annoyed me more than the publicity given to that method of obtaining a large quantity of honey.

I have for many years sold honey to manufacturers; but where they got uncured honey it had the effect of reducing their consumption in the near future, as it did not give satisfaction in the product of which it was a component.

I will take the liberty of citing a most striking example of marketing honey in a green state. Certain bee-keepers in the main buckwheat sections of New York, in recent years, got immense returns from their bees by taking off the combs before the honey had been sealed, or very soon thereafter. Some of them were called "Lightning Operators." Their honey was sold on the reputation that buckwheat honey had made for itself, that of being a good article for baking purposes; but after two or three years of disappointment with buckwheat honey (that they occasionally got hold of) these manufacturers finally determind that they would use no more buckwheat honey, for of late it had been very unsatisfactory in many instances. The result is, that for the past two or three years these largest of consumers will not have any thing to do with honey that has any symptom of buckwheat about it; and as its use for other purposes is very limited we have great difficulty in disposing of it; and when we do it is at a low price.

I am firmly of the opinion that, had it not been for the greed of these bee-keepers, buckwheat honey to-day would be in as great demand as it was ten and twenty years ago; for at that time it was considered one of the best kinds of honey for baking purposes.

Some mention has been made of late concerning Cuban honey, or the honey of the West Indies, which honey has also been largely used for baking. If these tactics of marketing the unripe product are followed they will soon bring the product of that section into such disrepute that honey from the islands will be shunned just as buckwheat is in the United States at the present writing.

Chicago, June 6.

[Mr. Burnett is entirely right, and we (A. I. R. and myself) wish to endorse his protest from beginning to end. Mr. Root senior only meant to refer to what had been done by one bee-keeper in Michigan; but it is apparent the practice should be condemned just as vigorously as actual adulterating, for the one leads almost to as serious consequences as the other. It is well known to the writer that some bee-keepers in York State have been careless about putting out unripe buckwheat honey; they supposed that so long as it was used for manufacturing purposes no harm would result; but if they could see some of the protests I have seen, they would let the honey fully ripen in the combs before extracting. It is true that the market for York State buckwheat extracted has been injured almost beyond repair. In saying this I do not mean to imply that all buckwheat from that section has been unripe.—ED.]

TRANSFERRING BY THE SHORT METHOD.

I have a very strong swarm that came to me in 1902, in a box hive, that I intend to transfer as soon as they swarm, by the "Heddon short way," as described in the A B C of Bee Culture. If the queen should refuse to come out, what could I do to get her? My old hive is only partly filled with frames; and their delay in swarming is because, I suppose, they are filling the hive to the roof. On page 337, in the A B C book, you say, "If the old queen in the new hive is a valuable one she should be caged at the time of making the second drive." Why should she be caged at the second drive? S. A. PEAK.

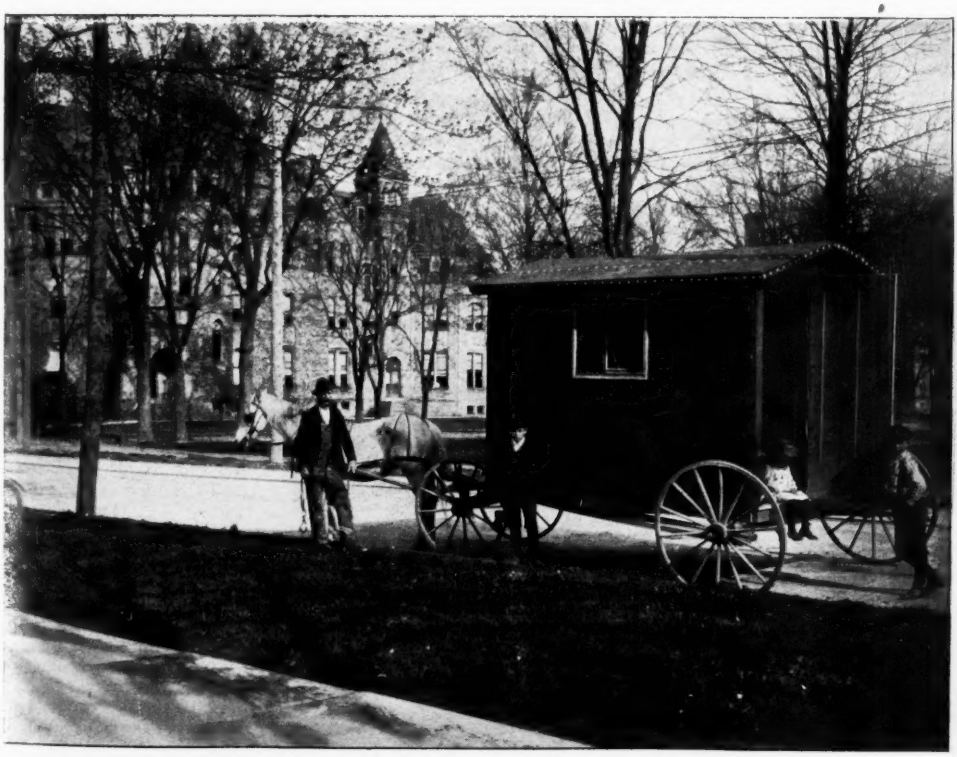
Northumberland, Pa.

[If the queen refuses to come out after driving (an altogether unlikely probability), the only thing to do is to tear the hive to pieces and hunt till you find her; for to carry out the Heddon plan the old queen must be out of the old hive and in the new one. If you do not see her at the first drive that would not be proof that she did not run in with the rest.

The old queen should be caged at the second drive, for the simple reason that, in the old hive in the mean time, there may and probably will be either a virgin or a laying queen, or possibly several virgins. If there is no choice between the old queen that is run out at the first drive, and the young queen or queens in the second drive, pay no attention to the queens, but let them fight it out, on the principle of the "survival of the fittest."—ED.]

POISON OR DISEASE—WHICH?

I am sending you a specimen of a diseased honey-comb which is troubling us bee-keepers of this county in half a dozen apiaries, to my knowledge. It has appeared in 50 to 250 hives. In my opinion the disease is neither foul brood, black brood, nor pickled brood. A great many of the bees have no wings. You can see they are not capped over, but slightly raised above the comb. It is worse in some hives than in others. I have lost 80 hives. The bees did not all swarm—only a few; and what did swarm with me went into the hives. The disease is in the mountains more than in the valleys. The honey crop up in this



CHALON FOWLS' PORTABLE EXTRACTING-HOUSE. SEE EDITORIALS.

county will be poor on account of disease; also weather has been cold up to the present time. We had frost in mountain districts up to the 20th of May; climate seems to be changed altogether. A. L. C.

New Almaden, Cal., May 29.

[The brood has been examined, but I am unable to diagnose it. It seems to have none of the symptoms of foul brood, black brood, or pickled brood. If you were not practical bee-keepers I should say that this sample of comb had been chilled or overheated at some time. Heat or cold would cause the young bees to hatch without wings. We are sending your letter, together with the brood, to Prof. Frank Benton, Apicultural Expert at the Department of Agriculture, Washington, D. C. But I would suggest, in the meantime, that, if heat or cold is not responsible for the condition, it is poison. The bees have gathered this poison, either from the spraying of trees or because certain persons have set out the poison with a view of killing off the bees. The poison theory seems to be the most probable of any thing.—ED.]

DO BEES EVER LEAVE A STING IN A BALLED QUEEN?

If what you say is true on page 395, in regard to bees leaving their stings in a queen, it must also be true that they leave their stings in drones and robber bees. And, if this is so, please inform me how long a colny of bees will have a standing army.

Matanzas, Cuba. C. E. WOODWARD.

[But the drones and workers are of small importance compared with a queen; and if the bees, we will say, in rare instances, would leave a sting in a queen, it would not necessarily follow that they would also leave a sting in drone and robbers, because the desire to make way with a queen is much more pronounced? After all, I am only referring to the exception that proves the rule. That I saw the sting in the queen's body, I *know*. In proof that I was not mistaken, I submit for your consideration the testimony of one who has seen just what I saw. Just listen:

I notice on page 395 what both Mr. C. E. Woodward and yourself have to say about bees leaving their sting in a queen. Mr. W. is wrong, as I have taken a queen from a ball of bees with three stings stuck into and adhering to her. D. CHALMERS.

Poole, Ont., May 11.

Mr. Chalmers is an old correspondent. But if this is not enough, there is more proof that we could get.—ED.]

THE SECOND DRIVE OF BEES IN A FORCED SWARM; WILL THEY FIGHT?

When you add the bees that have hatched from the brood of the old hive to the new forced swarm, will the bees belonging to the forced swarm not treat bees from that source (the old hive) as strangers?

Trair, Iowa. ROBERT PROVAN.

[As a general rule you can shake a second lot of bees after they have hatched from the brood-combs in front of the hive having the first lot of bees. The old hive should, of course, be removed then to a new stand. There may be fighting on the part of the bees; but in the case of the average Italians, when a lot of bees are dumped in front of an entrance there will be no quarreling. If perchance there should be, smoke them a little.—ED.]

A BRICK HIVE.

Would it be a success to build a hive on a solid rock, with brick plastered for sides? That would give a 4-inch wall all round. I think it would be cool in summer and warm in winter. JOHN C. HAMILTON.

Henderson, Okla., May 20.

[Such a hive as you outline would be altogether too cold in winter. The brick would convey the cold air of the outside clear into the cluster of the bees; moreover, such a hive would be too expensive.—ED.]

HIVELESS BEES IN COLORADO.

What kind of weather does it take for flowers to secrete honey? What is the matter when drones are led out in the spring and killed?

H. M. PACE.

Kysburg, Ky.

[Generally speaking, hot weather with hot nights, with every now and then a warm rain, produces conditions favorable for nectar secretions. When drones are killed in the spring it would indicate that the bees are possibly short of stores.—ED.]

A COLONY OF BEES WITHOUT A HIVE.

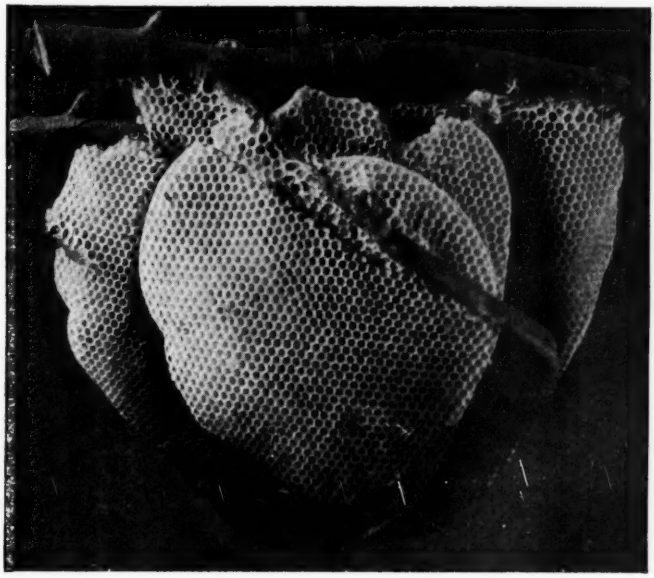
About six weeks ago a friend of mine found a bee-tree in an old apple orchard, and wanted me to go with him and get the honey. I supposed from what he said that they were in a hollow tree, asd is generally the case, an was very much surprised to find them in a branch of the tree, where they had evidently been since early last summer. They must have had an unhappy time during the many cold rainy days we have had here in Connecticut the past season. The latter part of October we had a good many frosty nights, and that we should have found any bees at all on the combs was surprising to me. There were not any bees on the outside, but from betwen the combs I shook into my nucleus box about a quart of golden Italians. I inclose two photographs, one showing the apple-tree on which the runaway swarm had made their home. The other one shows a closer view of the home; but we did not get any honey; not a trace could we find in any of the cells. W. W. LATHROP.

Bridgeport, Ct., Dec. 16.

[As will be seen from the date, the photos and letter came to us some time ago. After we had the engravings made we lost track of the manuscript until now.

HIVELESS BEES IN CONNECTICUT.

It is very unusual in the northern and eastern States for a swarm of bees to build combs in the open air; but it is not an un-



HIVELESS BEES FROM THE LIMB OF AN APPLE-TREE.

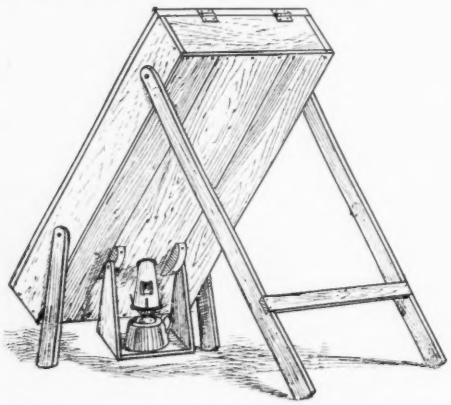
common thing in California, and some of the climates warmer than we have it here in the East

Several years ago I myself photographed one such colony hanging to the eaves of the honey-house of R. C. Aikin, at Loveland, Colorado. It was a swarm he said that had clustered under the eaves of the building, and not having time to take care of it he left it with the result that it built comb, and he was proposing to leave it out all winter. He did so, but the colony died. My photo that I secured at the time I now present for the first time in connection with the one by Mr. Lathrop.—ED.]

COMBINATION OF SOLAR AND ARTIFICIAL HEAT.

To render wax on a large scale, especially from old combs, and do it effectively, that is, leave as little wax as possible in the refuse, pressure under steam is probaly the only successful way. At the same time, a solar wax-extractor is a very desirable implement in any apiary. We are well aware that it is not a perfect machine —it is too slow in its operation. I have watched it many times, trying to find some way to make some improvement whereby its efficiency might be increased. I could see the wax drop off from the little chunks of comb, could see it run down the sheet-iron bottom, but yet it would take a good

while before it would run in the dish. I discovered that the wax at the lower end, just before it passed (or during its passage through) the screen would thicken and not move as readily as it did higher up; and for experiment's sake I decided to add some artificial heat.



By means of a swing-shelf (see illustration) I placed the little Daisy foundation-fastener lamp in such a position that the top of its chimney just entered a hole in the wooden bottom, right below that place where the running wax seemed to lose its mobility. The effect was surprising. With the lamp-attachment it required less than half the time to fill the dish at the lower end that it did before without it, and I am well satisfied that the little lamp greatly increases the wax productions of the extractor.

A swing-shelf is preferable, because, by its easy adjustment, a perpendicular position of the lamp can always be maintained.

La Salle, N. Y. G. C. GREINER.

[The principle of using artificial as well as solar heat for melting wax is one that has been in use in Colorado for some time, and with very good results. Our readers remember that R. C. Aikin, of Loveland, Colorado, and Mr. Philip Large, of Longmont, the same State, both use artificial heat in connection with that from the sun. The principle is correct, and it may be worth the while of supply manufacturers considering the advisability of an attachment for artificial heat on the plan above shown, when so ordered on solar wax-extractors which they make.—ED.]

DISINFECTION WITH FORMALIN NOT NECESSARILY COMPLETE, AND WHY.

In disinfecting combs containing foul brood it should be borne in mind that, while the *bacillus alvei* is destroyed by formalin, when completely exposed to its action, bacteria (or spores) covered with wax, paraffine, or other air-tight covering, are not killed by any thing without melting the wax. Any bacteria or spores that the bees might incorporate in the wax of the comb during construction or repairs would escape the effects of formaline. Later, in making repairs, should the bacteria be uncovered, reinfection would follow the first visit of the comb-builders to the brood.

Frames and hives brought to the laboratory to furnish cultures of the *bacillus alvei* were easily disinfected by placing the hives and empty frames in the dry sterilizer and running the temperature up to 400° F. After repainting, new colonies were introduced, with no return of the infection.

Disinfection with gas requires great attention to details; crevices filled with wax or propolis containing bacteria would be a constant menace to the health of the new colony.

In the average apiary the wise and ambitious larva will prefer new combs, and a hive that has been baked in the stove; and he will leave the foul-brood honey to the apiarist—it is beyond the pale.

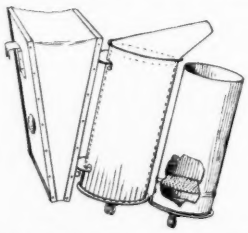
SHIRLS B. JACKSON, M. D.

Pittsburg, Pa., June 9.

[What you say is undoubtedly true; at all events it would be well to err on the safe side.—ED.]

THE VESUVIUS SMOKER—A SUGGESTION.

I was trying a new Vesuvius smoker today. It works very well as it is; but would it not work better if that back end that has theh andle on and the grate in had a cylinder-shaped tin a little smaller than the back that has the grate in, fastened to the back end solid, and extended up to the snout against another grate with a little air-space between this new cylinder-shaped tin and the body (or stove) of the smoker, as it is now? The air-space between the two would let it work just as easily as it does now; besides, it wouldn't get so hot. Then the best



thing about it would be that the fuel could be put in at the open end of this new cylinder-shaped tin, and leave the fire all at the back end, the same as a muzzle-loading smoker. Or if it is not necessary to put an extra grate up against the snout, there could be a rim there to keep the fine coals from getting in the air-space between the two cylinders GEO. E. ROZELLE.

Maple Lake, Pa.

[Your suggestion is in line with that made by one or two others. It may be that it would be an improvement, although it would increase the cost slightly. We will have some smokers made on that plan, and test them this summer. The illustration shows the idea in detail.—ED.]

BROOD IN A PATENT HIVE.

Why did not my bees raise brood in the fall, October and November? A man came here and wanted to sell me a hive and the right to make them. He said there was no brood in ours, but in his hive they would make comb all winter, and brood. I did not believe it; but they have so far. In some ways I like the hive; in others I do not. But it is the only hive that was making comb and brood, and is now.

MRS. A. E. CHESTERMAN.

Cowden, Ill.

[In a normal condition bees seldom raise brood in the fall. If that patent hive had brood in it, it was only accidental. A young queen that has just begun egg-laying will often and generally lay in the fall when older queens will have ceased; and it is possible that the patent hive had such a queen in it.—ED.]

THE CIRCLE OF BEES AROUND THE QUEEN; THE EDITOR'S VIEW CONFIRMED.

Mr. Editor:—You are right, on page 64. Queens are often, if not usually, surrounded by a circle of bees, and the latter's action toward the former is as you say when the colony is undisturbed. I have watched this a great many times in my full-size observation hives; but as to finding a clipped queen, after a swarm has issued in a cluster of bees on the side of the hive or somewhere, that has been an exception with me.

BLUE THISTLE.

Echium vulgare, blueweed, or blue thistle, page 65, appears to be a bad weed in Virginia. The meadows are one continuous mass of blue blossoms—a sight to behold, and not easily forgotten. If land were farmed systematically, and a short rotation practiced, the weed could do but little harm. It is a question whether bee-keeping could be carried on profitably in Virginia without the blue thistle. I have seen the bees on the blossoms in October, but they do not work on them profitably as late as this. It is seldom that a perceptible amount of honey is stored in August. The quality is good, but hardly equal to our basswood or clover honey. F. GREINER.

Naples, N. Y., Feb. 2.

THE NEW DRUG CURE FOR FOUL BROOD; A CORRECTION.

Your footnotes to Dr. Miller, page 73, and to Mr. J. M. Thomson, page 391, are somewhat misleading. "Formalin," "formol," "formaldehyde," etc., are aqueous solutions, about 40 per cent of formic aldehyde, a gaseous body formed from methyl alcohol by oxydation. Disinfection is accomplished by boiling the 40-per-cent solution of formaldehyde in a generator and conducting the liberated gas into the compartment to be disinfected, which should then be kept closed about 10 hours. Druggists, of whom the substance would have to be bought, also sell generators with instructions how to use. Mr. J. M. Thomson's device ought to prove perfectly reliable; perhaps he uses a little too much formalin, as the directions for 1000 cubic feet of space to be disinfected is given as 5 ounces. Spraying will be entirely useless to kill germs. Pastilles and a powder under the name of "glutol" are not to be recommended, as the percentage of formaldehyde gas in them is not certain, and they would have to be regenerated as the solution. H. O. VASSMER.

Excelsior Springs, Mo., May 7.

BEE-PARALYSIS; DON'T MAKE THE BRINE TOO STRONG.

On page 397 you ask for experience of bee-keepers in treating bee-paralysis. After reading the preceding article by A. H. Guernsey, I concluded to try the brine cure on my bees, as I was troubled with paralysis last season, and have been more or less this spring. I took two handfuls of rock salt and made about two quarts of strong brine, then spread the combs and gave them a good sprinkling May 30. As a result hundreds of adult bees were killed by the brine; but at this writing it is too soon to see whether the brood and larvæ are affected. I write this as a warning to others to be careful not to use brine too strong.

Denver, Colo. J. L. BELLANGEE.

A WHOLE APIARY DESTROYED BY SPRAYING.

Please discontinue my subscription for GLEANINGS, as I am hardly able to keep it up; besides, my whole apiary was ruined entirely by a conscienceless neighbor spraying his trees when in bloom.

Berne, Ind. JACOB J. SCHWARZ.

[This is one among numerous other instances that show how bees are killed by spraying when trees are in bloom. Certain manufacturers of spraying-outfits claim that the spraying-liquids they recommend will not kill the bees; but they do just the same. Any thing sufficiently powerful to kill forms of life that injure our fruit-trees is sure to be strong enough to kill a like form of life—the larvæ of bees.—ED.]

BEES POISONED ON THE COTTON-PLANT.

Did you ever hear of any trouble in the South about putting Paris green on the cotton to kill cotton caterpillars or worms? I hear it will kill them. I moved my bees here, so that it did not kill all of them when it was used. JAMES MCCOOK.

Natchitoches, La.

[J. M. Jenkins, in the cotton-belt, to whom this was referred, replies:]

I have had several reports of parties losing all or nearly all their bees from planters poisoning the cotton to kill the caterpillar, or "army worm," that occasionally appears, and that will destroy the cotton crop if allowed to. The remedy is to spray the plant with Paris green or other poison;

and as this is in June and July, when other forage is scarce in most localities, it catches the bees. J. M. JENKINS.

Wetumpka, Ala., Apr. 21.

PUTTING ON HIVE-NUMBERS WITH A STENCIL.

After reading "A Method of Hanging Hive-numbers," on page 445, I was prompted to write my experience. I have been a reader of GLEANINGS for some time, and these suggestions offered from time to time are of great help to me as a beginner. After treating my hives and supers to three coats of paint, I number them in black paint. For doing this I use stencils of my own make, with figures three inches high cut in cardboard. I number the hive, cover, supers, and stand. This, it seems to me, adds to their beauty. It also is of use to me in keeping a diary. I devote one page to each hive, stating when hived, number of pounds of comb honey taken off each year, whether wintered in cellar or outdoors, if fed in spring or fall, and many other small matters that are very interesting to refer to later in an experimental way. F. H. HOFFMAN.

Carleton, Mich., May 25.

HOW TO HASTEN OR RETARD THE CANDYING OF EXTRACTED HONEY.

Friend Root:—With reference to hastening or retarding granulation of extracted honey, I would say that, in my practical experience of 20 years, if you wish to hasten it, extract before it is ripe, and keep in a cool place. If you wish to retard it, defer extracting until *thoroughly* ripened, then keep in a warm dry place. It seems to me that is about all there is to this matter, from a non-scientific standpoint.

PREVENTING THE MIXING OF SWARMS BY THE CLIPPED-WING PLAN.

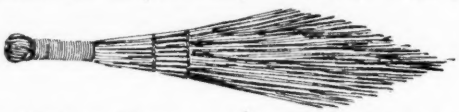
After having considerable experience with sheets and blankets for the prevention or stopping of the mixing of swarms, if there are several of them in the air at a time, as there frequently are, and the bees are determined to enter one hive, or a less number than that from which they issued, I would say the sheets or blankets are quite effectual; but where the object is to prevent mixing, and where one swarm is in the air, and were over issuing, and the sheets or blankets are used for the purpose of stopping the issuing of these swarms, *I* would say that in nine cases out of ten they would be a failure; and in the first case I would rather have a good smoker than a wagon-load of sheets and blankets. I am speaking from personal observation, based on the supposition that the queens of these swarms are all clipped, caged, and at the entrance of their new hives, on old stands. The old hives being removed, I have had as high as 8 swarms in the air at the same time, and each one hiving itself individually and automatically, with no helper, and no assistance except a Bingham smoker, and some of the hives only two feet apart. ELIAS FOX.

Hillsboro, Wis.

A BEE-BRUSH MADE OF PINE NEEDLES.

I send you a bee-brush I use and make in a few minutes' time, out of pine needles, which is, I think, decidedly the best plan of brush I have ever used. The shape enables you to brush the bees from both sides of a comb without turning the brush in your hand, and the point at the end is just the thing for getting the bees out of cracks, holes, and corners.

These brushes should be made preferably of light broomcorn, shaped from the front end as made, see cut, and do the trimming off the back, as this allows all flexible straw on edges of brush. The Coggshall brush is too thick and too broad and too stiff, and cripples thousands of bees, and angers many. I extract from 5



to 7 bbls. of honey a day, and brush all the bees with one of those crude home-made affairs. We have no broomcorn here, or I'd have made a better-looking sample.

Wewahitchka, Fla. D. R. KEYES.

[Some of the Coggshall brushes that have been sent out are too heavy—have too many strands. We have tried to get the broom-makers to thin them out more, but they seem determined to make them heavy, because they are accustomed to make them so. Any one who has a bee-broom that is too heavy can very easily thin it out with a pair of shears, to a point when it will give a light, gentle sweep over the combs.—ED.]

QUEENLESS BEES THAT DIDN'T BUILD CELLS.

Wishing to Italianize a colony of blacks, I removed the queen, finding her on the frame, thus leaving them with plenty of brood and eggs. Going back a few days later to look for queen-cells to destroy, I was surprised to find there were none. Thinking it was a case of two queens, I ran them through an excluder. Still I was more surprised, as I found no queen. Thinking she had eluded me I ran them through again, but no queen could I find. The bees—a populous colony—allowed all brood to seal without a single cell started. Lastly, to cap it all, they accepted an Italian queen which at once commenced laying.

Are black bees subject to insanity, or did they mistrust another queen was coming? G. A. BOSTWICK.

Verbank Village, N. Y.

[This case is quite remarkable, if you are sure there were no cells; for it is one of the rules that queenless bees will always

build one or more cells. In this case it is quite possible, and I might say probable, that there was one or more cells built, that escaped your notice. I have seen cells capped over, the ends of which were but a little more than flush with the combs, which could very easily escape scrutiny. I am of the opinion that, if you had not introduced a queen, you would have found later a virgin in the hive.—ED.]

HOW TO CONVERT A CIDER-PRESS INTO A WAX-PRESS.

I read Mr. Salisbury's description of his wax-press with interest. I will suggest an improvement. When I made my first shipment of bees from the South, some years ago, I had a lot of broken combs. I made 100 lbs. of wax, which was pressed in a cider-press. I got most of the wax out, but it made a mussy job. Two years ago I had a bottom, circle, and follower, made out of beech wood, that looks exactly like Mr. Salisbury's cut. I made 150 lbs. of fine wax during my spare time in two days. I placed a blanket over the press to keep the heat in. Bee-keepers having a cider-press can convert it easily into a wax-press.

West Bend, Wis. H. C. AHLERS.

PLURALITY OF QUEENS FROM SUPERSEDURE.

I have a colony of bees that superseded their queen. Instead of finding only one queen about their hive they hatch from I found thirteen nice queens. A few were in the cells yet, ready to crawl out. I counted the cells that had queens in, and found some 30 in all where queens had hatched out. Now, what is the cause that so many hatch out, and the bees do not kill them when the first one is hatched out?

WM. I. F. HOFFA.

Womelsdorf, Pa.

[The circumstance you relate is nothing so very unusual, except that there were more than the average in the case of a queen that is superseded. Hybrid bees, or Italians crossed with Holy Lands or Cyprian, might raise thirty or more cells when they were superseding an old queen if she was about played out.—ED.]

CURING A BEE-STING BY THE APPLICATION OF A SLICED ONION.

I noticed in A B C of Bee Culture that nothing but hot or cold water is any good for a bee-sting; but I was stung on the face, and it swelled up in my head, and down to my shoulder, and it kept swelling for twenty-four hours, and I bathed it in cold water, and then went on with my work. My mother looked in a doctor book, and that recommended fresh-cut onion above all others. I tried it, and the swelling started to go down at once.

ETHRIDGE WEBBER.

Tolland, Mass., June 15.

[You will pardon me, but I question very much whether the application of the onion had any thing to do with the reduction of the swelling. The poison from a bee-sting is injected through the skin through a *very minute* opening. The very fact that swelling took place shortly after, goes to show that the virus had been dissipated locally in the tissue to such an extent that no remedy of any sort, applied from the *outside*, could possibly neutralize the poison in such a way as to reduce the swelling as you describe. Heat relaxes, cold contracts. The only thing that would be of any value after swelling takes place is hot or cold water, preferably hot. In the one case it would reduce congestion of the parts; in the other, it would reduce the fever. Alternate application of hot and cold water would be more beneficial than either alone.—ED.]

YOUNG BEES NECESSARY TO ENCOURAGE THE FLIGHT OF QUEENS.

As a general thing I do not like to offer any advice; but in the matter of mating of queens in confinement, I am sure that you will always have trouble trying to get young queens to go out where no young bees are allowed to fly. With me such a thing would be worse than folly. Not having sufficient young bees is the main cause of the section-box nuclei being a failure. They encourage and direct the young queen more than you think. Remember, I know this from trial and close observation.

Vigo, Texas. J. E. CHAMBERS.

[There may be something in your suggestion.—ED.]

FEEDING BACK FROM BELOW.

Have you ever tried feeding from below when feeding back? I fed this way last year, and had such good success that I shall try it again this season. The honey finished in this way was as nice as any I had. STEEN FREEMAN.

Cedar Mills, O.

[The usual plan is to feed from above. I have never had any experience in feeding back, and could not form an opinion as to the merit of the plan you speak of. Perhaps some of our subscribers who have, can give us their experience.—ED.]

RAMBLER'S STRAINER.

What back numbers of GLEANINGS contain a detailed description of Rambler's strainer? Is the improved strainer on the market? L. J. UTT.

Pala, Cal., May 5.

[Rambler's strainer was described and illustrated on page 683 of our issue for Sept. 15, 1899.—ED.]

A CHEAP HIVE-TOOL.

A good hive-tool is a piece of buggy-spring. You can find plenty of them at any shop where they repair buggies, already broken in two, and sharpened at one end flat. Some are square on the flat end, and some round.

Clinton, Ill. HENRY WILSON.

And the Lord God formed man out of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul.—GEN. 2: 7.

I was somewhat surprised recently to see the *Sunday School Times* take the position strongly that the *soul* perishes with the body, and that it is only the *spirit* that is imperishable. Of course, there were several correspondents who disagreed, and quoted the scripture to prove their position. The editor replied that the terms *body*, *soul*, and *spirit* are often used in the Bible in a broad sense, or perhaps interchangeably; but he insisted, notwithstanding, that the general meaning of the word "soul," as used in the Bible, is the part that perishes with the body. After thinking the matter over, and studying my Bible, I am inclined to believe that the position is correct. For instance, the Holy Spirit is often mentioned. We speak of the influences of the Holy Spirit; but nowhere in the Bible is there any mention of the soul of God, nor any suggestion that God *is* a soul. Souls belong to humanity, and perish with the body. If this is so, the expression "immortal soul" is an erroneous one. No souls are immortal; but the spirit is immortal, and lives for ever.

Now, this is a little preface to what I want to talk about; and may be you will think the connection with the following is rather remote; yet somehow or other they persist in linking themselves together. I am going to quote again at length from my good friend T. B. Terry. Perhaps some of you may think that we are giving a good deal of space to this matter of health, and to the food we eat. I admit it, and sometimes I am tempted to think that our discussions do not amount to much after all; but I think daylight is coming; and friend Terry gives us a most vivid glimpse of the direction from which daylight is to come. Now read carefully the following, taken from the *Practical Farmer* for Feb. 7:

THE POWER OF THE MIND OVER THE BODY—WORK FOR HEALTH WITH ABSOLUTE FAITH IN YOUR SUCCESS.

Several years ago, when the writer was sick in New York, a first-class physician was employed. He appeared to know his business perfectly. After analyzing the urine, as he said, he understood the case exactly. He told friends that I was in a critical condition; however, I got better in a few days. Before I left he said to me: "You are subject to kidney trouble. There is an excess of acid in the urine. In the future you must never eat any thing that is sour—vinegar, sour strawberries, sour oranges, lemons, etc. They will aggravate this chronic trouble of yours." This was said with authority, and I had no more doubt of the truth of the statement than I had of being alive. His manner and earnestness made it a settled fact in my mind. I did just as he told me, for years, except that once in a while the desire for sour strawberries, or some lemonade, was too great, and I ate a few, or drank a single glass, always expecting to pay dearly for it. In every single instance my symptoms grew worse after indulging in this way, showing conclusively to my mind that the doctor was right, of which I had never had the slightest doubt, however. During the warm weather in particular, how I did want something sour! At last I would indulge, and increased trouble would come in a few hours. Sometimes I kept at it, but was soon in such distress that I was only too glad to quit it. Although the doctor's directions were carefully followed, as a rule, and other good doctors consulted, life was a burden much of the time during those years. Well, after a time I began to think and study over the matter in dead earnest. My old motto, "Where there is a will there is a way," came to my mind, and I wondered why that could not be applied to curing bodily troubles as well as poor land and hard times. Being in a frank mood to-day, let me tell you that my first inspiration came from a so-called fakir. When I was completely discouraged, could not eat any thing scarcely without its hurting me, and doctors and medicine did no permanent good, a circular happened to come from a man who promised to cure any disease, no matter how bad, if the breath still remained in the body, and to do it entirely without medicine. Treatment, $5.00 a month. I read it to wife, making fun of it, of course. She said: "If there is any possibility of his helping you any, why not try him? If you do not take any thing he can not hurt you." Now I knew it was all a humbug, but, just for the pleasure of studying the scheme, and having something new to think about and to help pass away the time, I sent $5.00, with description of my troubles. The reply came promptly, and was overflowing with hope and unbounded assurance that the writer could not fail. He impressed on my mind with wonderful force, what I was fairly well up in before, that I must have more oxygen from breathing more fresh air, for one thing. But here was the great point, which I copy from his letter: "Just settle it, once for all, in your mind, that you are going to get entirely well, sooner or later, doctor or no doctor, as you certainly are." Why, my dear friends, I went down stairs after reading that inspiring letter, like a boy, and within 24 hours new life began to come into my body. The mind, the spirit, was roused marvelously by the positive assurance, or magnetism, or whatever you call it, of the man, and, frankly, he did far more for me than all the doctors had been able to do; and still not long afterward the postal authorities arrested and fined him for using the mails to swindle people. Doubtless his game was to make money, and he claimed to do what he could not, but I was vastly more than satisfied with the value I received for my money, and before I get through you shall judge about the doctors. Among other things, I got some good litmus paper at a drugstore in the city, and began to keep an exact record of what I ate and drank daily, and how I felt, and the condition of urine. Litmus paper, you know, is blue but turns red when wet with acid, more or less, according to the amount present. In due time it was proven, absolutely that when I felt the worst and suffered most there was the least acid in the urine. When I told this to one of the physicians who had tried in vain to cure me, he said at once, "It is an alkali condition, then, that is making the trouble." Oh! why couldn't he have discovered this years before? Well, I at once made a quart bowl full of good strong lemonade, and never took it from my lips until the last drop was drained, and another quart went the same way before night. Oh, how good it tasted! I had craved it so. It did not hurt me at all; in fact, I at once felt better. I knew when drinking it, absolutely, that the doctor had been wrong. Not ten days before, my wife had lemonade on the table at dinner time, and I wanted it so badly that at last I drank one glass, expecting that it would hurt me, as the doctor said, and it did. There is no chance for mistake in this matter; I know what I am writing. I now use lemons freely whenever the acid is craved. I carry lemons and sugar with me, winters, always. My troubles in the past came partly from withholding from the body the very fruit acids that it needed and craved sometimes almost beyond endurance. You may gather several points from this article. One is the marvelous power of the mind over the body. When you determine to get well any way, whether or no, you have made a tremendously long step in that direction. I confess I could not believe myself that the very thing I needed would hurt me, just because I was certain it was going to, if I had not actually had years of experience in the matter, on both sides of the question. Many a physician owes his success, not to drugs he gives, but to the power he possesses of making patients certain they are going to get well right along. On the other hand, unscrupulous doctors can keep their patients back and line their own pockets. As the space is more than full you may look for the other points; they are easy to find.

There, friends, the above is from Terry, whose reputation is world-wide as a teacher and lecturer at farmers' institutes. You may smile when you read it. I am not sure but I laughed out loud. You may say there is no particular point to it; but there is a point that gives a glimpse of the wonderful way in which we were created, according to our text, and the way in which man became a *living soul*. We are creatures of habit. Why, look here. I have a nap every day just before dinner. My system, or whatever you may call it, has become so accustomed to it that it clamors for quiet, rest, and sleep, just—well, we will say as a pen of pigs get uneasy when they are not fed about the usual time. This involuntary part of myself that takes care of the digestion and other things gets into a habit, or rut. On Sunday, in order not to get drowsy during the sermon, I take a nap, as a rule, at 9 o'clock. I have no trouble whatever, in going to sleep. I always go to sleep instantly. All other days my nap is at half-past ten. Well, every Monday morning at 9 o'clock I begin to feel used up and worn out. Do you know why? Well, it is because, the day before, this peculiar machine of mine had a resting-spell; and *because* it was the day before, it has got a notion into its head (if you will excuse the expression) that a rest should come *every* day at 9 o'clock. For a good while I did not understand why these feelings came at 9 o'clock. After a time I "caught on" that it was Monday morning when I had them. Then I remembered it was the *shadow*, if I may so call it, of the nap I had the day before.

It may not be so with every one; but my organization strongly demands regular habits. The machinery gets ready for food, gets ready for water, at regular periods; and it runs better if *supplied* at regular intervals. You all know more or less about this. You have all had experience in the same way. Well, now, this doctor told Terry that a particular kind of food was hurting him. He proved it by chemical demonstration. An excess of acid and fruit would have to be stopped. Why, no wonder our poor friend said it was "as plain as daylight." He stopped eating fruit, fully expecting that indigestion and distress would cease, and they did so. Why, I have gone without fruit, lemonade, and things of that sort, a great part of my life, just as friend Terry did, and have told friends where I was visiting right and left that I could not eat *such* and *such* things without getting into trouble. Once in a while I would break over, as friend Terry says he did, and then I would watch for the unpleasant symptoms. Usually they came. *Sometimes*, however, they did not.

At Omaha, when bee-keepers were eating Rocky Ford muskmelons by the dozen, I said, "Well, now, I do not believe this beautiful fruit or vegetable will hurt me. It seems as if God designed it for human food," and I pitched in with the rest. I had a good half-dozen, one after the other. They all assured me so positively that such fruit would not hurt anybody that I began to have faith it would not hurt *me* a particle.

Now, friends, let us not be in a hurry to rush to conclusions. There is another side to this, I feel convinced. When Terry was conducting farmers' institutes in Missouri he not only ate fruit at mealtimes at the hotels, but he went out into the markets and bought it by the basketful; and I remember wondering if he could stand so much fruit. My impression is, he was eating too much. We have all had experience in eating fruit too freely, say when it sets our teeth on edge, and there is pretty clearly an excess of acid in the system. At such a time, I believe it is *the* thing to have a meal or two of nice beefsteak and graham bread. By the way, I always crave *cheese* when I am eating a good deal of fruit. I think nature would indicate pretty nearly what we need if we could get rid of our *notions*. Yes, dear friends, I do believe that we are all full of notions. With some like myself you might callit "hobbies." We carry these notions and hobbies to an extreme; but does it not seem almost incredible that we should carry them to such an extent that fruit or lemonade would cause us distress, just because we got a notion it would? Is there a possibility that fermentation can get a going, and rouse us up at night during a sound sleep, just because we have got a notion in our heads it would? Why, I am ashamed to admit it, but I am afraid it is true. People get a going in certain directions, and they lose their common sense—yes, they "lose their heads." A man told me an hour ago that the present cold spell (I am wearing an overcoat while I dictate) right here in June was clearly predicted by Hicks. I attempted a little remonstrance. Said I, "Did Hicks say there would be a cold spell here in Northern Ohio?"

"No, he did not say that; but he said there would be hailstorms and cold rains in different parts of the country."

I replied that he could always say that with safety. There never was a June without cold rains and hailstorms somewhere; but when he said, "Oh! but Hicks is always right, I have watched him for years," I had to giveit up. There is no use in talking with such a man. He has a notion that Hicks has miraculous foreknowledge, and that it will come out just as he expected it would, every time. You need not laugh at his faith, for there are many of us who reason in the same way. I do not suppose our faith in our special ruts would bring a hailstorm, but I do think it might produce a stomach ache. The action of the mind, as Terry says, has such an influence on digestion that digestion itself is a *slave* to it. The very small boy is too sick togo to school. He is a truthful, honest boy. Suddenly a party comes along that is going fishing. He begins to plead with mamma. He says, and says truthfully, "O mamma! if I go

fishing I won't be sick, I just know I won't." If his mother lets him go fishing (of course, it is not the proper thing for the mother to do) it is just as he predicted. He has not an ache, and is not sick a bit—never felt better in his life.

Now I am going to say something that may be a mistake. I think on the whole I will not *say* it—I will only *suggest* it. When I went to Dr. Salisbury (and Dr. Lewis later) they examined my urine and told me what the trouble was, and prescribed a beef diet. When I suggested I did not believe that even the beef diet would stop my malarial chills, they were so emphatic and positive, and they explained it all out so plainly with their scientific instruments and superior knowledge, I could not *help* believing they were right. I once said to one of them, "Why, doctor, how is it possible that you persuade so many people—even those who have been all their lives in the habit of being a slave to their appetites, to undertake this terrible ordeal?"

I had been through the ordeal, not only weeks but months, and I knew what it was. The reply was something like this:

"Oh! we know we are right, and they soon become convinced that we are right, and then they get well and strong."

Well, now, my suggestion is that probably a lot of this may be explained in the way Terry has outlined it. Why, of course this explains a lot of the new treatments—Christian science, telepathy, absent treatment, etc. It is not only unnecessary to see the doctor and hear him talk, but they have acquired such skill of late that they write a little circular, like the one Terry paid $5.00 for, and this circular will have so much energy and vim in it (they used to call it "animal magnetism") that he, the author, makes people *believe* what he says. They eat what they please; and if their faith holds out they are all right. Now, then, can the mind of a sick man be well by just the force of his own will? I do not dare say he can; but I will say he can to a great extent. Then, again, here is a perplexing question: How is it that sickness comes upon us when we are honestly working hard at our appointed tasks—yes, the tasks that we love? Why do we get sick? Where does sickness come from? Dowie says sickness is of the Devil. Well, perhaps Dowie has got hold of a great truth or a partial truth. I don't know but we might as well say it is the evil one as to lay it to some human being that puts *notions* into our heads about sickness.

Every little while some wise man pops up and says, "Go on about your work, and do not pay any attention to your aches and pains. Do not even talk to your friends about your faintness and indigestion. Do not tell your wife. Eat whatever nature seems to crave, and eat in moderation, and do not listen to the suggestion (shall I say of the Devil?) of quack-medicine advertisements. Many people get aches and pains by reading advertisements. The druggists are kept alive (and prospering) because the drugs and the advertisements on the bottles inspire people with faith. Do you remember the druggist's clerk who told us that he noticed that people always got better, no matter what medicine they bought? They were *all good*. Terry's story would indicate, however, that the bottles on the druggist's shelves have nothing to do with the cures performed. It is simply the patient's faith in the wrapper. If he gets it into his head that the medicine is the thing he needs, it proves to be so.

Terry is a little rough on the family doctor where he tells about the doctor's decision from a single examination of the urine. If there is any thing in such examinations, they should be made daily through quite a period. If bad symptoms occur when the urine is strongly alkaline, instead of acid, we are getting right at the root of the matter. This doctor was very ready to acknowledge that it was probably too much alkaline instead of too much acid.

When I read friend Terry's story I had been craving fruit, but did not dare eat it. Even strawberries, when they first began to ripen, seemed to distress me, and I was wondering how it happened. Well, after reading Terry's story I went and made a good bowlful of hot lemonade, and drank it just before going to bed. I slept remarkably well till daylight. In fact, I had made up my mind such *would* be the case after reading Terry's story. It gave me faith. The next morning I ate a great dishful of strawberries, and the same for dinner and supper. That was a week ago. I have been using them freely every day since, and I told Mrs. Root this morning that I had as much vim and vigor and energy as I ever had before in my life.

May God be praised for the privilege of doing what I choose, and still feel well; and may God give us faith in his wondrous loving kindness; and may he teach us to avoid ruts and notions; and, above all, may he lead us away from the *suggestions* put in our minds by the evil one.

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